Stat 587, section 2: Lab 3 – self assessment

Use the tomato data used last week. This is a randomized experiment comparing a proposed "better" fertilizer to my usual fertilizer. Seven plants (treatment a) were randomly assigned to the "better" fertilizer; the other seven plants received the usual fertilizer. The measurement units are pounds of ripe tomato. Analyze the data using a two-sample t-test.

a) What is the pooled standard deviation?

b) How many degrees of freedom are associated with that pooled sd?

c) What is the estimated difference, expressed as better (trt a) – usual (trt b)? Include units.

d) What is the standard error of the difference?

Note/reminder, unless stated otherwise, this will be based on the pooled sd.

e) What is the two-sided p-value?

f) Write a one-sentence interpretation of that p-value.

Answers:

a) 6.18

b) 12

Note: If you got 6.49, or something close to that, you did an unequal variance (Welch) t-test.

c) 6.53 lbs. (6.5314 before rounding)

Note: most programs give you b-a = -6.53. Better – usual is a-b. Always be aware which version makes sense for your question.

d) 3.30 lbs

e) 0.0716

Note: If you got 0.092, you did an unequal variance (Welch) t-test.

f) Weak evidence of a difference between the better and usual fertilizers. (Or, if you really want to use 5% as a cutoff, no evidence …).

Two incorrect interpretations are: no difference between the two fertilizers; the two fertilizers have the same average yield.